

and to work and expand the thus separated successive portions of at least one of said layers, whereby there is accomplished said selective expansion without exposing the separated portions of said laminate, along the boundaries of said area to be expanded, to the full load of expansion pressure.

2. A method as set forth in claim 1 in which said layers are metal.

3. A method as set forth in claim 2 in which said layers comprise aluminum.

4. A method as set forth in claim 3 in which said layers are of substantially the same thickness.

5. A method as set forth in claim 3 in which said multi-layer laminate is made by superimposing two metal sheets and pressure bonding said superimposed sheets at their interfaces to produce said laminate.

6. In making hollowed products by selective expansion of areas of a multi-layer laminate, the process which comprises superimposing two sheets of metal on each other, separating the inner faces of said sheets by stop-weld material in successively occurring closely proximate areas substantially uniformly distributed over a substantially large portion of the inner faces thereof and comprising about 50% of the areas of said inner faces, so that there are frequently occurring interruptions exposing said inner faces directly to each other, pressure weld bonding said sheets to provide interfacially welded zones between said sheets corresponding to said interruptions, inserting the resultant multi-layer laminate in a die, restraining a portion of said laminate from separation by said die, introducing fluid under pressure between said adjacent layers, progressively breaking said interfacially welded zones with the force of said pressure, and continuing the application of said pressure until at least one of said layers is appreciably stretched and distended from the adjacent layer giving a hollow space between said layers.

7. In making hollowed products by selective expansion of a multilayer laminate, the process which comprises superimposing two sheets of metal on each other and separating the inner faces of said sheets by a layer having small spots in close proximity to each other and bounded by narrow intersecting lines of stop-weld material exposing said faces directly to each other, pressure weld bonding said sheet giving spots of welding between said sheets where said sheet faces are exposed to each other and unbonded narrow intersecting lines across said stop-weld material, inserting the resultant multi-layer laminate in a die, restraining a portion of said laminate from separation by said die, introducing fluid under pressure between adjacent layers, progressively breaking said interfacially welded spots with the force of said pressure, and continuing the application of said pressure until at least one of said layers is appreciably stretched and distended from the adjacent layer giving a hollow space between said layers.

8. In making hollowed products by selective expansion of areas of a multi-layer metal laminate, the process which comprises inserting in a die having a cavity a multi-layer metal laminate characterized by having inner faces of adjacent layers peelably bonded together, in at least a substantial proportion of the area thereof to be expanded, restraining a portion of said laminate from separation by said die, introducing fluid under pressure in said cavity between said adjacent layers, progressively breaking said bond with the force of said pressure, continuing the application of said pressure until at least one of said layers is appreciably stretched and distended from the adjacent layer giving a hollow space between said layers, and discontinuing the application of said pressure, annealing said laminate, and thereafter resuming the shaping of said laminate.

9. A multi-layer laminate adapted for expansion with at least one exterior surface retained against a die member having a shaped recess by introducing fluid under pressure between adjacent layers thereof to form a passage-way panel conforming to the die configuration, said laminate being characterized by having adjacent layers peelably bonded directly together over a substantial proportion of the interface therebetween, in the area to be expanded, and by having stop-weld material in said interface defining discontinuous unbonded interfacial zones of weakness distributed over the interface between said layers and separated by bonded zones, said bonded zones constituting the substantial proportion of the interface where said layers are peelably bonded together.

10. A laminate according to claim 9 wherein said discontinuous unbonded interfacial zones of weakness are substantially uniformly distributed over the area between said layers and comprise up to about 50% of said area.

11. A laminate according to claim 9 wherein the stop-weld material covers about 50% of the area of the laminate and is applied by a silk screen process.

12. A laminate according to claim 9 wherein the stop-weld material is applied by a silk screen process and the lines initially laid down under the screen range in width between about 70% and 100% of the final thickness of one of the adjacent layers.

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